

~~TOP SECRET~~

A-47  
Annex 3

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TICOM/D-73

D-73 }  
DF-57 }  
T-706 }  
AMCR. TRANS.

D-11 }  
BRIT. TRANS }

PROVISIONAL DESCRIPTION AND INSTRUCTIONS FOR  
USE OF APPARATUS 1313

The attached translation of TICOM document No. 706 was received from A.S.A. Washington under cover of Information Letter No. 33. T. 706 is dated 27th October, 1944.

2. Apparatus 1313 was designed to intercept A2 Teleprinter traffic. In A2 T/P procedure two five unit code messages are transmitted in such fashion that the impulses of each symbol of message I are followed by those of one symbol of message II and finally by two impulses as phase signal for synchronization purposes. Apparatus 1313 separates the incoming messages so that one teleprinter prints only message I and the other only message II.

TICOM  
13th June, 1946.

No. of Pages: 12

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The storing relay of this [D-13] system would be of interest to those envisioning Poly graphic Bandot schemes, constituting a means of overcoming some of the technical difficulties inherent in such systems.

Said E. Wagner, et al.

Declassified by D. Janosek,  
Deputy Associate Director for Policy and Records,  
on 10 NOV 2000 and by MPB

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Note comment of H. Wagner  
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A SW

This describes Loring Geract 1313, channel Bandot intercept gear captured by us and now used in our intercept stations.

Wagner: Please look at [unclear]  
[unclear]

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T 706

Provisional Description and Instructions for use of  
Apparatus 1313. (27 Oct. 1944)

Apparatus 1313 serves exclusively for intercepting A2 teleprinter traffic and may be used for operation with Mark (+) as well as with space (-) current (Arbeits- sowie auch Ruhestrombetrieb). The A2 teleprinter procedure transmits two messages in such fashion that, using the familiar five-impulse alphabet, the five impulses of a letter, figure or sign of message I are transmitted successively, followed by the five impulses belonging to message II. Following this come two impulses as phase signal for synchronization purposes. Hence, for the process we require  $5 + 5 + 2 = 12$  impulses, which are all of the same time length. After sending these 12 impulses the procedure is repeated, there follow five impulses of message I, five of message II and finally two of the phase-signal, etc. Apparatus 1313 separates the incoming messages after it has been brought into synchronization with the transmitter by means of the transmitted phase-signal, so that one teleprinter prints only message I, the other only message II. The normal telegraphic speed for teleprinters is 50 bauds. In many cases, however, it happens that the speed of the sender is lower, say 40 bauds. To enable the teleprinters attached to apparatus 1313 to adjust themselves to such possible variations, Storers (Speicher) are provided in Apparatus 1313 which permit a change of telegraphic speed. The Start-Stop impulses required for operating a teleprinter are added in proper sequence to the five impulses of each message in Apparatus 1313.

## Structure of apparatus 1313.

As shown in Fig. 1 the following removable separate units are mounted in a frame and connected electrically by cables in the frame.

- 1) 60 v stage, see diagram EVSt 1309-203
- 2) Tube rectifier II, see diagram EVSt 1309-201
- 3) Tube rectifier I, " " EVSt 1309-200
- 4) 12 v stage, see diagram EVSt 1309-778
- 5) Mechanical part, see diagram EVSt 1313-146 and 1309-382
- 6) Receiver amplifier with regulating device, see diagram DVSt 1309-240
- 7) Storer 1
- 8) Storer 2 " " CVSt 1313-147
- 9) Synchronization amplifier, see diagram DVSt 1309-202
- 10) Control part, see diagram CVSt 1313-145
- (11, 12, 13, 14) Boxes for connecting-cables and replacement parts.

The wiring of the frame may be seen in the diagram CVSt 1313-146. The external current supply for the apparatus is from a 220V ac line, deviations of  $\pm 10\%$  still permit safe operation.

Other current supply within the apparatus is cared for by the rectifier stages 1-4 according to Fig. 1.

The 60v stage contains a dry rectifier assembly. It serves as current source for the holding current circuits of the storage relays and for the circuits of the receiver magnets in the teleprinters.

Tube rectifier II is a stabilized power source. It provides the plate current for the vibrator in the synchronization amplifier, for the receiver amplifier without regulator device, also current for holding circuits of the two receiver relays in the receiver amplifier,



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moreover, in the tube rectifier II the grid voltages (biases) are taken off which are required in the several component parts. Tube rectifier I contains two separated rectifiers with adequately planned smoothing filters (Beruhigungsglieder). The first rectifier provides plate current for the last two stages in the synchronization amplifier, and the 3 tubes of the regulator device in the receiver amplifier. The second rectifier delivers plate current for the storage tubes. The 12 v stage contains two separate dry rectifier assemblies. Assembly 1 delivers current for the motor to drive the distributor-discs and the test-sender in the mechanical part. Assembly 2 gives, after careful smoothing, the current for the rotating, magnetically functioning deflection system (Ablenksystem) of the cathode ray oscillograph in the mechanical part.

The Mechanical part. A motor mounted here drives via a set of gears the brushes for two distributor discs, 1 test sender and the magnetically functioning deflection system (Ablenksystem) for the cathode ray oscillograph. The current supply of the cathode ray tube comes from the so-called high-voltage rectifier located above the tube. Also, in the mechanical part are the suppressors for the distributor discs, the storage tube common to the two storers and the armature and field resistors necessary for regulating the speed of the motor. In fig. 2 the screen (Schirm) of the cathode ray tube will be recognized at 1. The setting (tuning) of the brilliance of the Cathode Ray Spot is accomplished at 2 and that of its sharpness at 3. With switch 4 it is possible to switch the motor on and off. Knob 5 serves for regulating the revolutions of the machine to get local synchronization. The receiver-amplifier is a two stage amplifier with a final limiting stage tripped by the lower bend of the characteristic curve (?) [Mit einer aus dem unteren Knick der Kennlinie herausarbeitenden begrenzenden End-Stufe.] In the plate current circuit of the last tube lie two polarized relays, the teleprinter and the oscillograph relays. The regulator device contains 3 polarized relays which are excited by one tube each. The grids of these tubes are controlled by 3 segments on one of the distributor discs in the mechanical part. By throwing in the before mentioned 3 polarized relays, which with their contact sides affect the vibrator in the synchronization amplifier, it is possible to influence the frequency in appropriate manner, i.e. to regulate it. In fig. 3 the receiver amplifier has at 1 a meter [selector] switch (Messschalter) for control of tubes of the receiver amplifier, of the regulator device and the synchronization-amplifier. Knob 2 serves to adjust input voltage. 3 is the input socket for the radio receiver to be connected. At 4 a headset may be plugged in for monitoring. The Storer (Speicher). Apparat 1313 has two Storer. As already stated, one Storer is associated with each message to adapt the telegraph speed of the teleprinters to that of the transmitter to be received. Each individual impulse of the five-impulse-groups is held in the 5 impulse-relays. The individual relay has two windings, the exciter winding and the holding winding. There are also two other relays whose windings lie in the plate current circuit of a tube associated to each relay. The first relay has the function, after the appropriate tube has received on the grid side a short impulse from the distributor, of starting the teleprinter associated with that Storer. Then the teleprinter scans by the aid of its sender, which has been reconstructed for this purpose, the impulse relays of the Storer one after the other. According to the state of the storage relays the proper letter is printed. After the sender